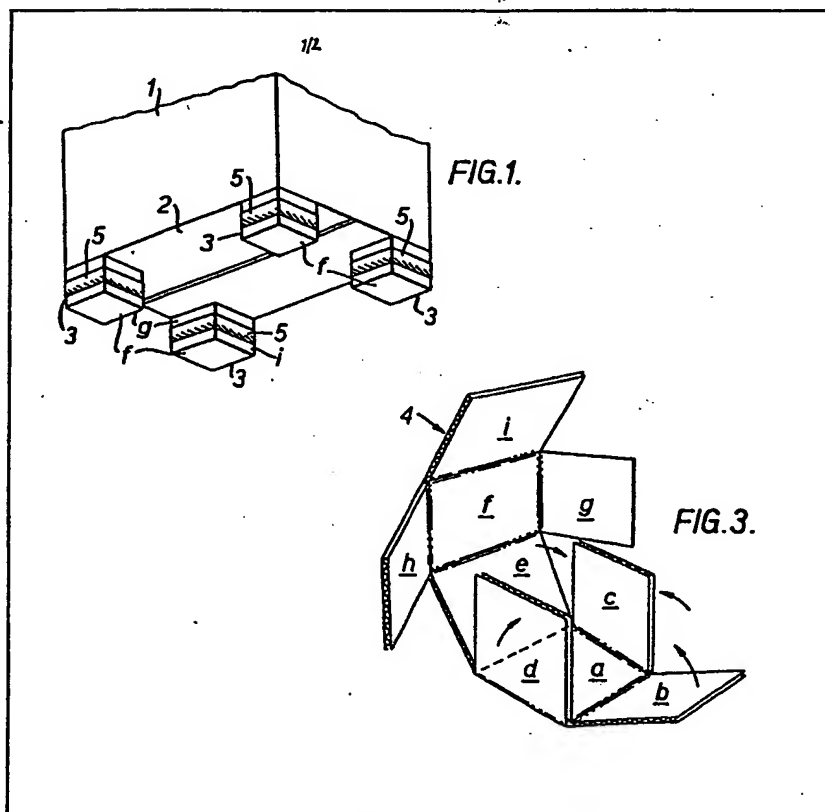


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GB 1431273
GB 1186695
GB 1134601
GB 1095378
GB 888428
GB 967202
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GB 772100
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GB 697232
GB 620701
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(54) Pallet structures

(57) The invention relates to improve-
ments in pallet structures, the
improvement residing in the feet of the
pallet structure, which is adapted to
allow entry of lifting forks underneath
the platform of the pallet structure. The
feet are attached to the underside of the
platform of the pallet and at least one of
the feet is formed by folding a blank into
a six sided close box-like structure (3),
which is then attached to the underside
of the platform (2). The blank preferably
comprises a rectangular portion (i, f, e,
a, b) having two cross bars (c, d and g,
h) of substantially the same length, the
blank being adapted to form a single six
sided right angled box on folding, pre-
ferably a rectangular parallelepipedon.
The blank may also be adapted to form
two feet by forming two box-like struc-
tures linked by a sheet of material (b')
from a single sheet of material (see Fig-
ure 5).



The drawings originally filed were informal and the
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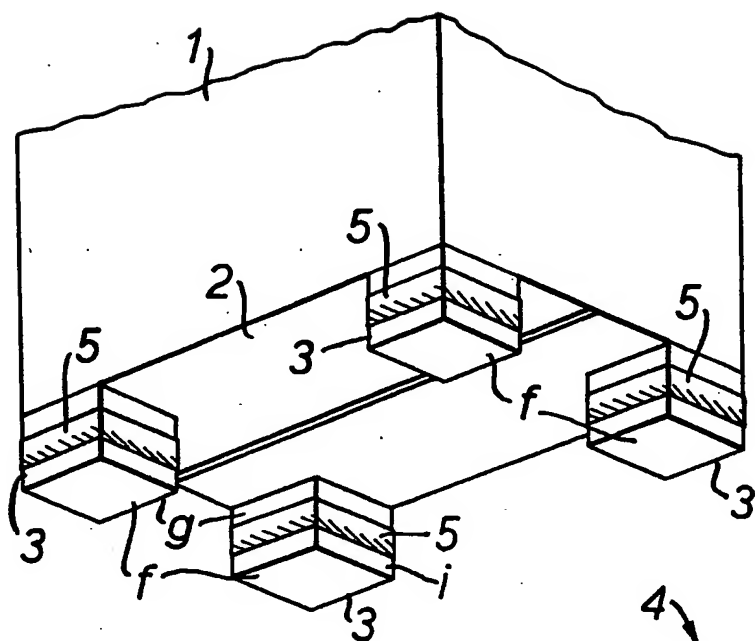


FIG. 1.

FIG. 2.

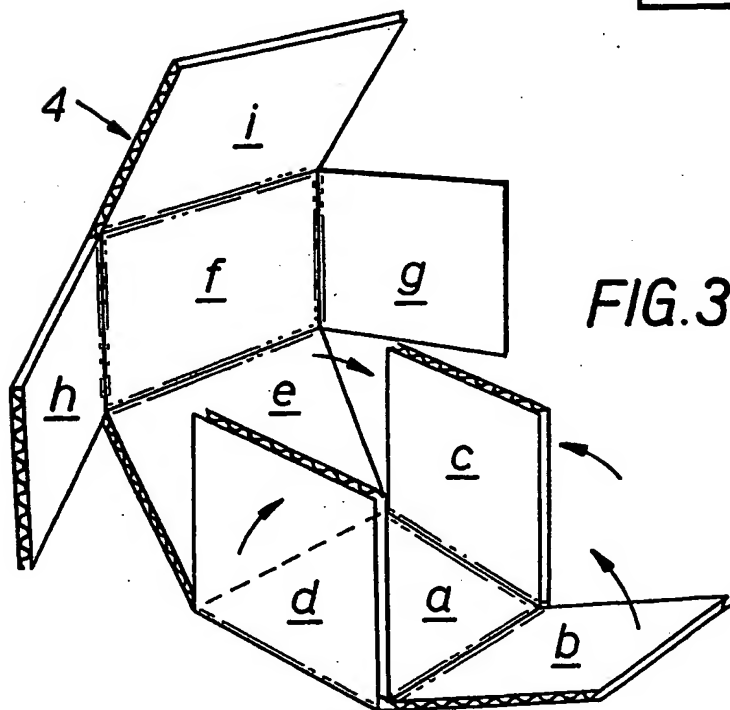
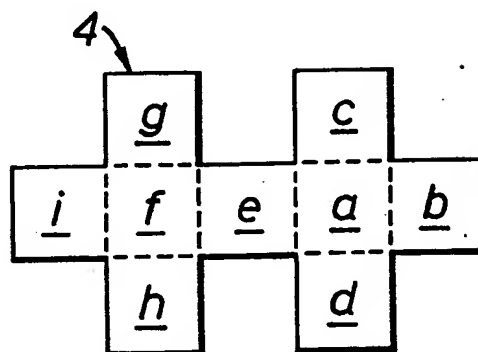
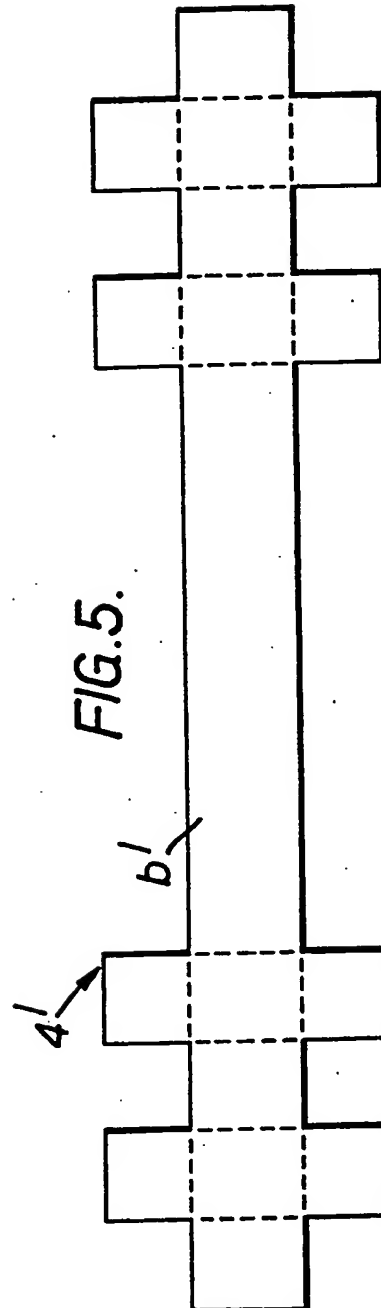
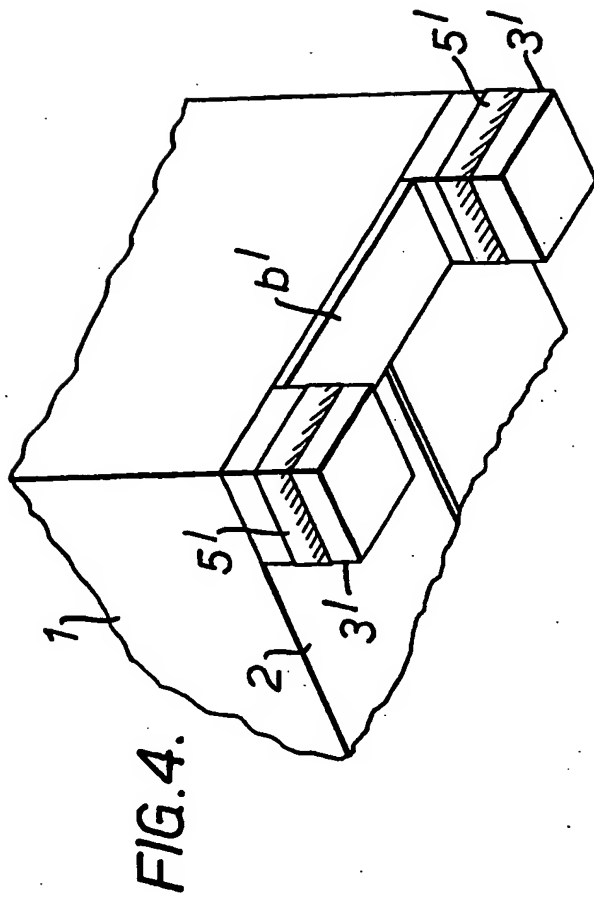


FIG. 3.



SPECIFICATION

Improvements in and relating to pallet structures

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TECHNICAL FIELD

This invention relates to a pallet structure.

STATEMENT OF INVENTION AND ADVANTAGES

According to the present invention there is provided a pallet structure having a spaced array of feet
 10 extending downwardly from a platform of the structure so that the space between adjacent feet provides entry for lifting forks and wherein at least one of the feet is formed from a blank of sheet material, said blank being folded to provide a close sided
 15 box-like structure which is secured as part of the pallet structure to present a flat side wall of the box-like structure downwardly for the pallet structure to stand on.

By the present invention the feet of the pallet
 20 structure can each be formed by folding an appropriately shaped blank of sheet material and secured, for example, by adhesive or stapling, to the underside of the platform as required. In this way the material from which the feet are formed is easily
 25 transported in sheet form prior to its ready assembly as required. Being formed from folding from a blank, the close sided box-like structure of a foot will usually be hollow with the advantage that the weight of such a foot will constitute a small part
 30 only of the overall weight of the pallet structure; if required however the box-like structure of a foot can enclose reinforcement of filling material such as a block of wood or foam plastics material such as polystyrene, the blank of sheet material being
 35 folded around the filling or reinforcing core.

Preferably the blank of sheet material is shaped so that the or each foot formed thereby after folding of the blank is a substantially rectangular parallelepipedon box-like structure of either oblong or
 40 square form. In a preferred embodiment the blank is of a shape substantially corresponding to the "Cross of Lorraine" except that the two cross-bars are of the same, or of substantially the same, length so that the blank is foldable into a single six sided
 45 right angled box structure of which two opposed sides are each formed of a thickness corresponding to one layer of the sheet material, three of the remaining four sides are each formed of a thickness corresponding to two layers of sheet material, and
 50 the remaining side is formed of a thickness corresponding to one layer of the sheet material. This latter box-like structure is preferably secured as part of the pallet structure so that each of the side walls having a thickness which consists of two layers of
 55 the sheet material extend downwardly of the platform to support the vertical loading from the platform. If required the blank of sheet material can be shaped so that two or more spaced feet each of box like structure and interconnected by a web of the
 60 sheet material can be formed by folding of the blank; for example the blank can be of a symmetrical shape substantially corresponding to a double "Cross of Lorraine" (in which the tails of each cross are connected) except that the four cross-bars are
 65 the same, or of substantially the same, length so

that the blank is foldable with two spaced six sided right angled box structures, which are interconnected by a centre strip of the blank.

After folding, a blank can be retained in its box-like structure by any suitable and convenient means as, for example, by adhesive, stapling or the use of binding such as an adhesive tape.

The sheet material of the blank will usually be a cardboard (of which heavy duty single, double or
 75 treble fluted cardboard is preferred) although other materials such as light metal or plastics sheet can be used and in the latter cases it is probable that the blank will be scored to facilitate folding or bending along predetermined fold lines.

The feet of the pallet structure (and usually there will be four, six or nine feet) will usually have a symmetrically spaced array to permit four-way entry for lifting forks. Other than the feet, the general structure of the pallet can be of conventional
 85 form, for example it is envisaged that the invention will be particularly suitable in its application to container or box-pallets in which a bottom wall or end of a heavy duty cardboard box will form the platform to which the feet are secured. Since the box-like structures (primarily intended for use as feet of
 90 the pallet structure) can easily be assembled it is possible for one or more spare blanks to be provided which can be assembled into a box-like structure and used for a block package or packing within
 95 a container pallet.

It is envisaged that the sheet material will usually be folded into the box like structure or structures subsequent to the blank being secured as part of the pallet structure - it is realised however that the
 100 blanks can be secured as part of the pallet structure after assembly of the foot or feet therefrom.

Further according to the present invention there is provided a method of forming a pallet structure which comprises securing at least one blank of
 105 sheet material to the underside of a platform of the structure prior or subsequent to folding the or each said blank to provide at least one close sided box-like structure which forms a foot of the pallet structure and has a downwardly directed flat side wall on
 110 which the pallet structure is intended to stand.

SPECIFIC DESCRIPTION

Embodiments of a pallet structure constructed in accordance with the present invention will now be described, by way of example only, with reference
 115 to the accompanying illustrative drawings in which:-

Figure 1 is a perspective view of the lower part of a first embodiment of pallet structure and shows the spaced array of feet thereon;

120 *Figure 2* illustrates the shape for the blank of sheet material from which each foot of the structure in *Figure 1* is intended to be formed;

Figure 3 is a perspective view illustrating the manner in which a blank of sheet material is folded to form a foot of the pallet structure in *Figure 1*;

Figure 4 is a perspective view of the lower part of a second embodiment of pallet structure and

130 *Figure 5* illustrates the shape for the blank of sheet material from which both feet shown on the structure of *Figure 4* are formed.

In the embodiment of Figure 1 the pallet structure comprises a container body 1 of corrugated fibre material for instance heavy duty cardboard having a rectangular bottom or end wall 2 formed by closed
5 flaps of the container. The end wall 2 constitutes a platform of the pallet structure and secured to the underside of such platform are four feet 3. The feet 3 are disposed in a symmetrically spaced array and each has a flat side wall *f* on which the pallet structure is intended to stand. In accordance with conventional practice the spacing between adjacent feet 3 is provided to permit entry of lifting forks. Each foot 3 is in the form of a hollow substantially rectangular parallelepipedon box-like structure of
10 substantially square form and is formed by folding from a blank 4 of corrugated fibre material for instance heavy duty fluted cardboard.

As will be seen from Figure 2 each blank 4 for forming a foot 3 has a shape which substantially corresponds to the "Cross of Lorraine" except that the two cross-bars are of the same, or of substantially the same, length. More particularly the blank has a size and shape in which there are nine substantially square parts *a* to *i* which are all of substantially the same area. The various parts of the blank 4 are intended to be folded through 90° relative to each other to form the box-like structure and the appropriate fold lines are indicated by the chain lines in Figure 2.
20 In the construction of each foot 3 a blank 4 is secured to the underside of the platform 2 by stapling the part *a* of the blank to the platform. The blank parts *b* to *e* are now folded towards each other as indicated in Figure 3 until they extend at right angles to the blank part *a*. The blank part *f* is now folded to extend at a right angle from the part *e* and into abutment with the edges of parts *b*, *c* and *d* and finally the blank parts *g*, *h* and *i* are folded towards each other and to extend at right angles from the part *f* so that such parts *g*, *h* and *i* coextensively
40 overlie and are in substantially face-to-face abutment with parts *c*, *d* and *b* respectively. To ensure that the blank 4 retains its box-like structure the blank parts *e*, *g*, *i* and *h* are bound together by an adhesive tape 5 (Figure 1). By the particular folding of the blank 4 as above described it will be seen that three of the four vertically extending side walls of a foot are formed by two thicknesses of the sheet material, that is overlying parts *h* and *d*, parts *c* and *g*, and parts *b* and *i*. Furthermore, by use of fluted cardboard preferably heavy duty the particular folding and shape of the blank 4 is such that four of the blank parts which will be subjected to vertical loading of the pallet structure will have their flutes extending
55 vertically for maximum support and thereby efficient use of the strength of the fluting (in the example shown in Figure 3 vertical disposition of the fluting will be provided in the blanks parts *c*, *d*, *h*, and *g*).

The pallet structure in Figure 4 is similar to that shown in Figure 1 except that the end wall 2 carries feet 3' pairs of which are formed of hollow box-like structure by folding from a common blank 4' of fluted cardboard. As will be seen from Figure 5 the blank 4' for forming two feet 3' has a symmetrical
60 shape which substantially corresponds to a double

"Cross of Lorraine" (whereby the tails of each of two Crosses of Lorraine are interconnected to extend one from the other) except that the four cross-bars are of the same or substantially the same, lengths. The various rectangular parts at each end of the blank 4' are intended to be folded through 90° relative to each other in a similar manner to that shown in Figure 3 to form the spaced box-like structures 3' which are interconnected by a central part *b'* of the blank. In the present example the central part *b'* may be considered as corresponding to the parts *b'* (in Figure 3) of two blanks 4' which are interconnected at the outer-most edges of their respective parts *b'* to extend one from the other (so that when the box-like structures 3' are formed as shown in Figure 4 the wall parts corresponding to the part *f* in Figure 3 do not overlie, in face-to-face relationship, any other parts of the blank). The form of the box-like structure 3' is retained by adhesive or other strapping 5' and the sheet of material for the blank is conveniently secured by staples as part of the pallet structure.

CLAIMS

- 90 1. A pallet structure, having a spaced array of feet extending downwardly from a platform of the structure so that the space between adjacent feet provides entry for lifting forks and wherein at least one of the feet is formed from a blank of sheet material, said blank being folded to provide a close sided box-like structure which is secured as part of the pallet structure to present a flat side wall of the box-like structure downwardly for the pallet structure to stand on.
- 95 2. A pallet structure as claimed in Claim 1 in which the one foot is a substantially rectangular parallelepipedon.
- 100 3. A pallet structure as claimed in Claim 1 and Claim 2 in which the blank comprises a rectangular portion having two cross bars, the two cross bars being of substantially the same length that the blank is adapted to form a single six sided right angled box structure upon folding.
- 105 4. A pallet structure as claimed in Claim 3 in which the blank is so adapted that when the blank is folded into the box-like structure two opposed sides are formed each of which has a thickness corresponding to one layer of the sheet material, three of the four remaining sides of the box each having a thickness corresponding to two layers of sheet material and the remaining side of the box formed is of a thickness corresponding to one layer of the sheet material.
- 110 5. A pallet structure as claimed in Claim 1 in which the shape of the blank is substantially shaped so that two or more spaced feet, each of box-like structure and interconnected by a web of sheet material, can be formed by folding of the blank.
- 115 6. A pallet structure as claimed in Claim 5 in which the blank has a symmetrical shape having a rectangular portion and four cross bars of substantially the same size.
- 120 7. A pallet structure as claimed in any one of the preceding Claims in which the close sided box-like shape of one foot encloses a reinforcing or a filling
- 125
- 130

core of material the blank of sheet material being folded around the filling or reinforcing core.

8. A pallet structure as claimed in Claim 7 in which the filling material is a block of wood or a foam plastics material.

9. A pallet structure as claimed in any one of the preceding Claims in which at least one foot is attached, by means of an adhesive or by means of stapling, to the underside of the platform of the pallet.

10. A pallet structure as claimed in any one of the preceding Claims in which the pallet has four feet each foot being spaced so as to allow entry of a fork from any direction underneath the platform of the pallet and each foot being formed from a blank sheet of material, said blank being folded to provide a close sided box-like structure which is secured as part of the pallet structure to present a flat side wall of the box-like structure downwardly for the pallet structure to stand on.

11. A pallet structure substantially as herein described with reference to Figures 1 to 3 of the accompanying illustrative drawings.

12. A pallet structure substantially as herein described with reference to Figures 4 and 5 of the accompanying illustrative drawings.

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